

REMARKS

Claims 1 and 3-21 are pending in this application. By this Amendment, claims 15 and 20 are amended. Reconsideration in view of the above Amendments and following remarks is respectfully requested.

Entry of the amendments is proper under 37 CFR §1.116 since the amendments: (a) place the application in condition for allowance (for the reasons discussed herein); (b) do not raise any new issue requiring further search and/or consideration (since the amendments are merely to satisfy a requirement of form asserted in the current Office Action); and (c) place the application in better form for appeal, should an appeal be necessary. The amendments are necessary and were not earlier presented because they are made in response to an issue raised in the final rejection. Entry of the amendments is thus respectfully requested.

The Office Action objects to claims 15 and 20. Applicants assert that the above amendments to claims 15 and 20 obviate the grounds for the objection. Accordingly, Applicants respectfully request that the objections to claims 15 and 20 be withdrawn.

The Office Action rejects claims 1, 3-7 and 12-20 under 35 U.S.C. §103(a) over JP 9-86188 (Shimizu) and U.S. Patent No. 6,163,454 (Strickler). The Office Action also rejects claims 8-11 under 35 U.S.C. §103(a) over Shimizu and Strickler and U.S. Patent No. 5,912,092 (Maruyama), and rejects claim 21 under 35 U.S.C. §103(a) over Shimizu, Strickler and U.S. Patent No. 6,225,788 (Kouzu). Applicants respectfully traverse these rejections.

Specifically, neither Shimizu nor Strickler, alone or in combination, discloses or suggests a battery structure comprising *inter alia* an upper covering member and a lower covering member wherein the upper covering member is on an air discharge side and the lower covering member is on an air introduction side; and wherein an aperture area of each of the ventilating holes formed in the upper covering member is smaller than that of each of the ventilating holes formed in the lower covering member, as recited in independent claim 1.

Items 1-4 of the "Response to Arguments/Amendments" section of the Office Action (1) imply the Applicants misread the previous Office Action as relying on a theory of inherency and (2) appear to disavow reliance on the theory of inherency. This is somewhat confusing in the context of Item 3 of the "Claim Rejections" section of the Office Action which, like the previous Office Action, states that a particular feature is "believed to be inherent, or if not inherent, overtly obvious . . .". Presented with the thusly worded Office Action, Applicants recognized an obligation to address the rejection as two rejections: one relying on the theory of inherency, and one relying on the theory of obviousness. Applicants therefore addressed both rejections.

In view of the current apparent disavowal of reliance on the theory of inherency, and the absence of a rebuttal to Applicant's previous arguments against an inherency-based rejection, Applicants assume that, despite the phrasing of Item 3 of the "Claim Rejections" section of the Office Action, the Patent Office is no longer asserting an inherency-based rejection. Accordingly, Applicants will address the rejection as if applied only under the theory of obviousness.

The Office Action states that the secondary reference (Strickler) is provided for the teaching of different hole sizes (Office Action, page 3, line 10). The Office Action also states that "the motivation for making the combination is the same as is explicitly disclosed in the [Strickler] reference" (Office Action, page 3, lines 11-12). Applicants respectfully disagree with this statement. Strickler, in col. 3, line 62, discloses why it is desirable to have relatively larger sized exhaust holes, as also acknowledged by the Office Action (page 8, line 1). Furthermore, Strickler discloses a storage enclosure, the enclosure being configured to include one or more cooling fan modules (col. 4, lines 21-26). Also, and as further explained in Strickler (col. 3, lines 62-66), Strickler's invention is to improve the flow of cooling air through an enclosure which contains larger sized exhaust holes than intake holes.

Accordingly, the alleged motivation to combine Strickler with Shimizu rests on the fact that Strickler states that it is desirable to have larger sized exhaust holes.

Based on the foregoing, it is clear that, if Strickler and Shimizu were combined, the resulting structure would have air flowing in through the smaller holes and out through the larger holes. Thus, regardless of how the structure were oriented in the vehicle, the larger ventilating holes would be the "ventilating holes for discharging cooling air in battery case." This is the exact opposite of what is claimed by Applicants.

Furthermore, in attempting to discount the "discharge" language of the claims, it appears that the Patent Office is confusing function and intended use. The "discharge" holes, in Applicants' invention, are so designated because the air effectively leaves the battery case through them.

Furthermore, the Patent Office is reminded that "all words in a claim must be considered in judging the patentability of that claim against the prior art". In re Wilson, 424 F.2d 1382, 1385, 165 USPQ 494, 496 (CCPA 1970). Therefore, the Patent Office may not ignore the phrase "... for introducing the cooling air into the battery case" and the phrase "... for discharging cooling air from the battery case".

Moreover, the Office Action states that "if the prior art structure is capable of performing the intended use, then it meets the claim" (page 4, lines 17-18). However, Applicants note that as discussed above, the prior art structure as modified would, at best, be a case including discharging air through large openings. Accordingly, even if combined, Shimizu and Strickler would not have resulted in the claimed invention.

The Office Action further states that Applicant's explanation as to the purpose of Applicants invention "seemingly violates fundamental laws of heat and mass transfer" (page 5, item 11), and raises various points of doubt as to whether the invention would actually work as claimed. However, the attached Declaration and reference clearly establish that those

skilled in the art recognize that, just as stated in Applicants' specification, cooling effect is increased in proportion to the square root of the flow rate. Additionally, Applicants confirm that, despite any variables such as the air that has gone past the lower batteries being warmer than the air that enters through the lower ventilating holes, the invention does work as claimed. Applicants' invention does not violate laws of heat and mass transfer.

If anything, the Patent Office's doubts strengthen the conclusion of non-obviousness; if a person of ordinary skill in the art would not have thought that the invention would work in the manner claimed, that person would not have been motivated to make it.

The Office Action states that "in a steady state system mass in is equal to mass out, narrowing the space between the upper batteries will increase flow rate past the battery ... but making smaller exit apertures will only slow the gas in terms of number of grams passing the batteries in a given unit of time" (emphasis added). The first start of this statement is correct, and in it the Office Action correctly recognizes that restriction of the space results in increased flow rate. The Patent Office should also recognize that the exit apertures, too, are simply another "restriction" at which flow rate is increased.

To facilitate the Examiner's understanding, attached is a marked-up copy of Fig. 6 of the application wherein are defined five different airflow areas. Air flow V_1 , adjacent to the lower intake holes, is the slowest airflow area in the battery cell. Subsequently, as the air flows to higher parts of the battery cell, as it passes between the batteries in a very restricted place the flow rate V_2 of air in this area must be higher than the flow V_1 rate of air in the yellow area. Subsequently, as the air reaches the cross-shaped ribs in the middle portion of the battery case, since the space in which the air flows is larger than the space between the batteries, then the air flow rate V_3 in the rib area is slower than the air flow rate V_2 but higher than the air flow rate V_1 . Moreover, as the air continues flowing upward between the upper batteries, the air flow rate V_4 is increased due to the small space available between the

batteries. Subsequently, when the air flow reaches the higher area, adjacent to the discharge holes, then the air flow V_5 decreases compared to the air flow V_4 between the upper batteries. However, even if the air flow V_5 is slower than the air flow V_4 , the air flow V_5 in the blue area is still higher than the air flow V_1 in the lower area because of the presence of the cross-shaped ribs. Accordingly, the air flows at a higher rate V_6 through the (upper) discharge holes than through the (lower) intake holes (flow rate V_0).

In other words, $V_3 > V_1$, $V_4 > V_2$ and $V_5 > V_3$. Therefore, the upper batteries, which have movement, are cooled faster such that the overall temperature of the upper and lower batteries is the same.

For at least the reasons outlined above, Applicants assert that independent claim 1 defines patentable subject matter. Accordingly, Applicants respectfully request that the rejection of claim 1 and its dependent claims be withdrawn.

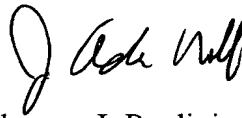
Regarding the rejection of claims 8-11 under 35 U.S.C. §103(a), Applicants assert that Maruyama fails to cure the deficiencies of Shimizu and Strickler in disclosing each and every feature of claims 8-11, including the limitations of claim 1. Thus, for at least their dependency on independent claim 1, Applicants assert that claims 8-11 define patentable subject matter. As such, Applicants respectfully request that the rejection of these claims be withdrawn.

Regarding the rejection of claim 21 under 35 U.S.C. §103(a), Applicants assert that Kouzu fails to cure the deficiencies of Shimizu and Strickler in disclosing each and every feature of claim 21, including the limitations of claim 1. Thus, for at least its dependency on independent claim 1, Applicants assert that claim 21 defines patentable subject matter. Accordingly, Applicants respectfully request that the rejection of claim 21 be withdrawn.

In view of the foregoing, it is respectfully submitted that this application is in condition for allowance. Favorable reconsideration and prompt allowance of claims 1 and 3-21 are earnestly solicited.

Should the Examiner believe that anything further would be desirable in order to place this application in even better condition for allowance, the Examiner is invited to contact the undersigned at the telephone number set forth below.

Respectfully submitted,



Thomas J. Pardini
Registration No. 30,411

J. Adam Neff
Registration No. 41,218

TJP:JAN:TMN/jan

Date: November 21, 2003

Attachments:

Declaration
JP - A - 10-270006
Marked-up copy of Fig. 6

OLIFF & BERRIDGE, PLC
P.O. Box 19928
Alexandria, Virginia 22320
Telephone: (703) 836-6400

<p>DEPOSIT ACCOUNT USE AUTHORIZATION Please grant any extension necessary for entry; Charge any fee due to our Deposit Account No. 15-0461</p>
--